



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,672	06/09/2005	Peter Asplund	GTE-07-1051US	3692

35811 7590 11/09/2007
IP GROUP OF DLA PIPER US LLP
ONE LIBERTY PLACE
1650 MARKET ST, SUITE 4900
PHILADELPHIA, PA 19103

EXAMINER

CHAUDHRY, SAEED T

ART UNIT	PAPER NUMBER
----------	--------------

1792

MAIL DATE	DELIVERY MODE
-----------	---------------

11/09/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/538,672	Applicant(s) ASPLUND ET AL.	
	Examiner Saeed T. Chaudhry	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 7-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/9/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Applicant's preliminary amendments and remarks filed July 7, 2007 have been acknowledged by the examiner and entered. Claims 1-7 have been canceled and claim 8-28 are pending in this application for consideration.

Claim Rejections - 35 USC § 112

Claim 9, 11, 12 and 18-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9, 11 recite the limitation "the drops" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claims 12 and 27 are indefinite in the recitation of "from low to high pressure values", since it is not clear what is a low value and a high value.

Claims 13, 18 are indefinite in the recitation of "a pressure drop sufficient enough" since it is not clear is it a pressure of the liquid or the droplet pressure and at which pressure range does not leave a liquid film on the walls.

Claims 22, 25 and 26 are indefinite in the recitation of "sufficient velocity" since it is not clear which velocity wet the compressor sections and avoid the contact with the structure at the same time.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (c) he has abandoned the invention.
- (d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States.
- (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.
- (f) he did not himself invent the subject matter sought to be patented.
- (g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

Claims 7-28 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Asplund.

Asplund (5,868,860) disclose a method and apparatus for cleaning a turbine by introducing a spray of cleaning fluid in the inlet duct of a turbine with at least one nozzle under pressure, which enters parallel to the air flow of the turbine.

The inventive method, is implemented by spraying small quantities of finely-divided liquid onto and through the object to be washed. The liquid is finely-divided to a degree such that when the liquid is sprayed against and through the object, the liquid particles will follow the same routes as those earlier taken by the air-borne contaminants through the object. Finely-divided liquid is sprayed onto and through the object in quantities corresponding to 0.5-60 l/min. and at an overpressure that lies in the range 50-80 bars with the liquid particle size (diameter) lying in the range of 250-120 μm (1 μm =10^{sup}-3 mm), and with particle velocities within the range of 100-126 m/sec., these values to be compared with corresponding values in present-

day systems working with pressures of 3-10 bars, particle sizes of 150-950 μm and particle velocities in the range of 25-45 m/sec (see abstract and claims).

The reference does not specify slip ratio, which is a ratio of inlet speed of air and outlet speed of the fluid. Since Asplund discloses a bell shaped turbine having a larger inlet and smaller outlet as disclosed by the applicant. Then the ratio of the inlet speed and the outlet speed would be the same. Therefore, Asplund process inherently reach a slip ratio as disclosed by the claimed method and system, since the velocity and the size of the droplets are within the range of the claimed process. If the ratio is not within the range as claimed herein, then it would have been obvious at the time applicant invented the claimed process and apparatus to manipulate the ratio and the mean size of the drops for better and efficient results.

Claims 7-28 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hayward et al.

Hayward et al. (6,073,637) disclose a method and apparatus for cleaning gas turbine compressor by spraying droplets of a cleaning fluid in the compressor parallel to the air flow.

The variety of droplets size required for any particular compressor will vary from type to type and will also depend on the cleaning fluid used but will be in the range of 50-500 microns. The first step will cover the first 2 stages in the low pressure compressor. This step should last for 60 seconds and injection pressure must be kept between 90-100 bar in order to reach a droplet speed of approximately 120 m/s and droplet size of 120 μm . The next step is for the last stage of the low pressure compressor and should last for 45 seconds. The pressure must be reduced to 60-70 bar in order to get droplets of approximately 150 μm . The high pressure compressor will require a 3 step sequence.

The third step is for the fourth stage (first stage of the high pressure compressor) and it should last for 45 seconds and pressure should be reduced to approximately 45 bar to produce droplets of 180 μm . Between stages four and five the temperature and pressure conditions will result in evaporation of the water in the wash fluid and the duration of the steps must therefore be extended. Step four will cover stages five, six and seven. The duration of this step is 90 seconds and the pressure is reduced to 30-35 bar. The last step will cover stages eight, nine and ten, also with a duration of 90 sec. With a pressure of 20 bar, the droplet speed for the last step is down to approximately 55 m/s. which is still higher than the airspeed in front of the compressor bell mouth (see col. 5, line 20 through col. 6, line 4).

The reference does not specify slip ratio, which is a ratio of inlet speed of air and outlet speed of the fluid. Since ^{Hayward}~~Asplund~~ discloses a bell shaped turbine having a larger inlet and smaller outlet as disclosed by the applicant. Then the ratio of the inlet speed and the outlet speed would be the same. Therefore, Hayward et al process inherently reach a slip ratio as disclosed by the claimed method and system, since the velocity and the size of the droplets are within the range of the claimed process. If the ratio is not within the range as claimed herein, then it would have been obvious at the time applicant invented the claimed process and apparatus to manipulate the ratio and the mean size of the drops for better and efficient results.

The Prior art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Trewin et al (6,553,768) disclose a method and apparatus for cleaning turbine compressor by spraying large droplets of liquid.

Ogden et al (6,932,093) disclose a method and apparatus for washing a gas turbine combustor by discharging fluid in an upstream direction from a nozzle assembly into the combustor to facilitate removing particulate matter from the combustor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saeed T. Chaudhry whose telephone number is (571) 272-1298. The examiner can normally be reached on Monday-Friday from 9:30 A.M. to 4:00 P.M.

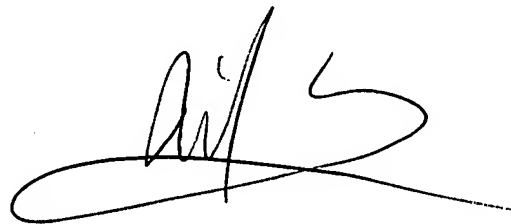
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Michael Barr, can be reached on (571)-272-1414. The fax phone number for non-final is (703)-872-9306.

When filing a FAX in Gp 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communication with the PTO that are for entry into the file of the application. This will expedite processing of your papers.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Saeed T. Chaudhry
Patent Examiner

A handwritten signature in black ink, appearing to read 'Michael Barr', with a large, sweeping horizontal stroke underneath.

MICHAEL BARR
SUPERVISORY PATENT EXAMINER